



Could the footprint belong to the person in the image?

Instructions

You, Dan and Lucy work in a forensic science unit lead by Belinda. The unit is asked to investigate whether a footprint, found at a crime scene, belongs to the person whose partial image is captured by a security camera at the scene.

The footprint was measured to be 24 cm in length.

These pieces of evidence are all that the team has to work on.



Task One: Dan's first thoughts

Dan suggests that if they can determine the true belly-button height of the man in the image from the security camera they may be able to make some progress.

After some investigation Dan identifies the brand and style of the board shorts being worn by the person. He also finds that they are made as a "one size fits all" with a length of 56 cm. Could this be used to find the real-life belly button height?

- 1.** With a partner list as many ways as you can to estimate the real-life belly button height of the person in the image.

2. Choose one way and use it to estimate the height of the person in the image.

Don't forget to include any rules, tables or graphs you used.

Task Two: Lucy poses a question

Is it possible to estimate the height of a person from their 'belly button' height?

Height and belly button height are measured in the CensusAtSchool questionnaire. This data could be used to investigate Lucy's question.

3. Brainstorm ideas of how you can investigate Lucy's question using the CensusAtSchool data.

4. Choose one way and use it to estimate the height of the person in the image. Don't forget to include any rules, tables or graphs you used.

You can use a [prepared random sample](#) Excel spreadsheet or you can go to the CensusAtSchool website and use [the Random Sampler](#) to obtain your own sample.

Reference year	<i>Select Year</i>
Select questions	<i>Height</i>
Sample size	<i>200</i>

Task Three: Another thought

Can the sample be used to estimate the height of a person from the length of their foot? If you can, is it the same as the height from the belly button estimation?

5. Brainstorm ideas of how you could investigate if it is possible to estimate the height of a person from the length of their foot. You could use the list you brainstormed above.

6. Choose one way and use it to estimate the height of the person who left the footprint. Don't forget to include any rules, tables or graphs you used.

You now have a second estimate of the height of the person in the image, this time calculated from their foot length. Are the two estimates the same?

Task Four: Could the footprint belong to the person in the image?

- 7.** From your investigations, prepare a report to the manager of the forensic science unit. You will need to clearly state your conclusion about the question "Could the foot print belong to the person in the image?" You must provide evidence to support your conclusion.

Extension

The Vitruvian Man and Golden Ratio

There are many relationships in nature similar to the one above. Arm span and height is another relationship that can be investigated using CensusAtSchool data.

The Vitruvian Man is one example that intrigues students of all ages. Who is he? Who made him? When? How is he connected to your earlier work?

Similarly, the golden ratio occurs in a wealth of situations, natural and man made.

This question is investigated in CaSMa12: The Golden Ratio.